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WHAT IS
THE
MODUS OPERANDI OF MEDICINES?

DO THEY PRODUCE THEIR EFFECTS BY THEIR ACTION ON
THE BLOOD, AS TAUGHT BY ALL MODERN
PHYSIOLOGISTS?

OR,

DO THEY PRODUCE THEIR EFFECTS BY THEIR ACTION ON
THE ORGANIC NERVOUS SYSTEM, THROUGH
THE AGENCY OF THE BLOOD?

THE LATTER QUESTION CONSIDERED AND AFFIRMATIVELY ANSWERED.

BY

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NEW YORK:
ROBERT CRAIGHEAD, PRINTER,
81, 83, AND 85 CENTRE STREET.
1863.

PREFACE.

As the doctrine enunciated in the following few pages is original, I trust no person will look on it in any other light than as being an honest desire to explain phenomena which have hitherto baffled the medical profession to elucidate scientifically.

The organic nervous system is the intricate organization ordained by the Creator to be the abode of life.

The Oxygen furnished by the air is carried by the blood to the organic nervous system and keeps the flame of life in existence.

The blood supplies the current for conveying the oxygen to the organic nervous system.

It is true, life could not continue in existence without oxygen. It is equally true, oxygen could not be conveyed to the organic nervous system without blood. It is equally true, therefore, that blood is necessary for the maintenance of life.

If the blood is deprived of its requisite quantity of oxygen by any cause life becomes depressed in the organic nervous system. As oxygen is an external agent introduced into the blood, and as life is exalted or diminished in proportion to the quantity of oxygen introduced into the blood, it follows as a consequence that other external agents will increase or destroy the powers of life when introduced into the blood by their actions on the organic nervous system, hence the term "blood-poisoning" is used by physicians when they want to explain the cause of disease or death. Blood-poisoning signifies, the blood has been poisoned, or, in other words, states the effect that follows the administration of a certain drug without assigning the cause why this effect should result.

My object, on the present occasion, is to add the additional link to the chain of explanation, by stating the precise mode in which life is destroyed by introducing poisonous agents into the blood, as well as the way life is preserved by the introduction of certain remedial agents in the blood, and, in addition, the manner in which medicines act as antidotes to each other.

In conclusion, it will be observed, life depends on the integrity of the organic nervous system, whilst the oxygen and the blood are necessary subsidiaries to keep life in being in the organic nervous system.

230 Washington Square South,
New York, 27th July, 1863.

WHAT IS

THE

MODUS OPERANDI OF MEDICINES?

I have listened with attention to the reading of Prof. Percy's admirable paper. I think he has hit on the proper theme to establish great and profitable results. He has fully initiated the principles on which medicines should be administered as remedial agents or exhibited as antidotes to counteract the effects of poisonous agents, but it appears to me he has left a most important matter without sufficient or satisfactory explanation.

I trust I will not be deemed presumptuous in attempting to supply the deficiency attributable to him on this head.

I do not question the truth of his experiments, I simply wish to scientifically elucidate what he has practically demonstrated.

It is as true as two and two make four that the blood is a fluid substance, and equally true that the heart and arteries are solid substances.

It is true, when veratria is introduced into the blood that it still continues in a fluid condition.

It is true, when strychnine is introduced into the blood it still continues in a fluid condition.

It is true, when brandy is introduced into the blood it still continues in a fluid condition.

It is true, veratria causes the blood to move slowly, the heart to contract slowly, and the calibre of the arteries to dilate.

It is true, when strychnine is introduced into the blood it causes the blood to move rapidly, the heart to contract quickly, the arteries to contract quickly.

It is true, when brandy is introduced into the blood it causes the blood to move strongly and in a large volume, the heart to contract strongly, and the arteries to contract strongly.

The question now suggests, how are these phenomena to be explained; in other words, how a fluid substance can act on a solid substance, or how can the action of a fluid substance, as regards the dilatation, contraction, and strength of the arteries, be explained? must not these conditions of the arteries depend on being depressed, stimulated, or invigorated? The blood in its fluid state, either with or without the medicinal agents, could not produce any change on the solid structure which composes the coats of the arteries, unless the coats of the arteries were endowed with a sense of perception as to the character of the agents introduced into the blood, and were subject to the impressions of these agents.

It is evident one agent depresses the action of the heart and the action of the coats of the arteries, whilst another causes spasms of the coats of the arteries and increases the action of the heart, whilst a third invigorates the coats of the arteries and strengthens the pulsation of the heart.

To suppose the blood alone could produce these changes is erroneous. The agents act on the organic nerves in the coats of the arteries, and in the muscular fibres of the heart.

It is not necessary to introduce agents always into the blood to cause dilation or contraction of the blood-vessels; as for instance, when a little brandy is thrown into a person's eye it will instantly become blood-shot, the capillary arteries dilate, and allow blood to enter them. This condition of the arteries cannot be attributed to absorption of the brandy into the blood, inasmuch as the vessels of the other eye are not affected, which they should be if it depended on absorption of the brandy into the blood. The brandy stimulates the organic nerves of the conjunctiva. When strychnine is sprinkled on a blistered surface after the removal of the cuticle, the muscular fibres contract at once; this cannot be attributed to absorption of the strychnine into the blood, inasmuch as the other muscles do not contract, which they should do if the condition of the muscles depended on absorption of the strychnine into the blood; the strychnine stimulates the organic nerves of the abraded surface to contract, spasmodically. When concentrated prussic acid is placed on the tongue of a rabbit, it kills the animal by its sedative action on the organic nervous system before it can be absorbed, precisely as a blow on the semilunar ganglion kills by the shock it gives the organic nervous system, thus expelling life from its abode in the organic nervous system.

When salt is placed on the web of a frog's foot, it is followed by increased vascularity of the parts to which the salt is applied, but as increased vascularity is not observed to take place all over the frog, it follows, the vascularity is not the result of absorption, but the local application of the salt which acts as a direct stimulant on the organic nerves of the part.

When a blister is applied, the cantharides stimulate the organic nerves of the surface to which the blister is applied, and is followed by the effusion of serum; if the action of the cantharides depended upon the absorption of the cantharides into the blood, then the whole surface should be vesicated. The cantharides stimulate the organic glands, and increase their activity of secretion.

When a person is scalded, vesication takes place; here it cannot be said that the hot water is introduced into the blood, as the whole surface should be vesicated if such were the case; the hot water stimulates the organic glands of the part, increased secretion of the organic glands follows; hence the effusion of serum which takes place can be explained.

Professor Post's case proves that the dilatation of the iris does not depend on the absorption of stramonium into the blood, inasmuch as the iris suffering from nervous irritation was not affected by the action of stramonium, but continued contracted whilst the sound iris became dilated. If the contraction of the iris depended on the absorption of the poison into the blood, then the irides should be equally affected.

What stronger proof than Professor Post's case could be given to prove that the nerves and not the blood are the agents engaged in regulating the contraction and dilatation of the irides?

If the communicating branch of the third nerve with the lenticular ganglion is divided, dilatation of the pupil follows. It therefore follows that contraction of the iris must be connected with the integrity of the communicating branch of the third nerve; in other words, that contraction and dilation of the irides are the result of nervous power.

If section of the right cervical nerve is followed by dilatation of the arteries on the right side of the head, the change in the arteries cannot be attributed to the absorption of any medicinal agent absorbed into the blood, but to the nervous connection between the ganglion or nervous centre, and the organic nerves distributed to the coats of the arteries being intercepted.

If the branches of the median nerve are divided, will not the will lose its power over the movements of the index finger, communication between the brain and nerves of the finger being intercepted; or, in other words, will not the index finger become paralysed, on the same principle the vital power located in the organic ganglion or nervous centre loses its power, when the cervical nerve is divided, over the nerves in the coats of the arteries, the nerves in the coats of the arteries become paralysed, the coats of the arteries therefore lose their power of contraction and become dilated.

It has been suggested by Professor Dalton that belladonna, when applied externally, is absorbed into the blood and causes dilatation of the irides. The iris is a solid body, and cannot be dilated by a fluid body; it is not philosophical to declare a fluid body, such as the blood can operate on, a solid body, such as the iris, so as to dilate it.

The belladonna acts on the organic nerves which supply the irides and causes the dilatation of the irides, a fact fully established by the experiment just alluded to, on the connecting branch of the third nerve.

Prof. Percy's experiments are highly satisfactory as demonstrating that the veratria, when introduced into the blood, causes the heart to move slowly, the blood in the arteries to move slowly, the capillary arteries to become dilated until vitality ceases altogether.

The antidotes suggested by Prof. Percy to obviate the poisonous operation of veratria are such as should be expected to meet the difficulties caused by the action of the poison on the organic nervous system, viz.: strychnine, brandy, carbonate of ammonia.

It is a clear case the veratria when introduced into the blood acts by its depressing influence on the organic nerves of the heart and arteries; it is equally clear that when carbonate of ammonia or brandy is introduced into the blood, these agents act by stimulating and invigorating the organic nerves of the heart and arteries; it is also equally clear, when strychnine is introduced into the blood it gives tone to the organic nerves of the heart and arteries, the veratria, as just stated, depresses vitality in the organic nervous system as indicated by the weakened state of the circulation.

The brandy and carbonate of ammonia strengthen the organic nervous system as indicated by the excited state of the circulation. The veratria paralyses the organic nerves in the heart and arteries indicated by the relaxation and prostration of the muscular system, the strychnine produces an opposite effect, causing spasm of the organic nerves of the arteries, indicated by the spasm of the muscles, or, in other words, counterbalances the effects produced by the veratria.

To prove the correctness of the theory of the *modus operandi* of the medicines as advanced by me, let any man inject veratria mixed with warm blood into the arterial system of an animal, he has just killed by the abstraction of blood, and observe will it cause the arteries to dilate, or let him inject brandy mixed with warm blood into the arterial system and observe will it cause fulness and strength of the arterial system. Let him inject strychnine mixed with warm blood into the arterial system and observe will it cause contraction or spasm of the arteries. If the blood, when mixed with these agents, is capable of producing the effects just indicated in a living animal, why should not the same results follow in the arterial system of an animal recently killed? The same description of animal structure is brought under operation, and a similar circulating medium is had recourse to. It is true no such phenomena as those described in a living animal take place. It is certain something else besides the blood must be concerned to produce the changes consequent on the various kinds of medicinal agents specified.

It will be said, inasmuch as life is extinct, no such action can be expected from the medicines.

If it is true all the blood of an animal can be drawn off without destroying life, then it becomes evident life is not located in the blood.

If it is true life can be destroyed by a blow on any of the principal ganglions of the organic nervous system, as for instance the semilunar ganglion, then it follows that life is located in the ganglions or organic nervous system and not in the blood.

If life is located in the organic ganglions, then it follows that life must be located in the organic nervous system. If organic nerves are in the coats of the arteries, then it follows that life must be located in the organic nerves which supply the arteries. It has been stated by Professor Dalton, that too much importance is attached to the organic nervous system, as regards the operation of medicines, but if the statements I have made are true, and I think their truth cannot be questioned, it follows that all the operations of medicinal agents for good or evil, depend on their action on the organic nervous system when introduced into the blood. When poisons are introduced into the blood by the lacteals and lymphatics in the intestinal canal, or by the lymphatics on the surface of the body, or by the process of inhalation, the action is all the same, they destroy life by destroying vitality in the organic nervous system.

Blood-poisoning is a vague term, signifying that the blood has been poisoned, but gives no explanation or idea how the poison causes death. The blood carries the poison and communicates it to the organic glands at the termination of the arteries.

To illustrate the truth of this explanation, it is only necessary to call the attention to what happens when arsenic is applied to a cancerous ulcer on the lower extremity. The arsenic is absorbed by the lymphatics, it is carried into the venous circulation to the right side of the heart, to the lungs, to the left side of the heart, and by the aorta, its branches, ramifications, and capillaries, to all the organic glands wherever located. The organic glands of the stomach become imbued with the poison; inflammation of the mucous membrane of the stomach is the result, and symptoms of poisoning by arsenic present themselves.

When Fowler's solution is given in a case of eczema, it is taken up by the lacteals and lymphatics in the intestinal canal, passes into the venous circulation, next into the arterial circulation, is given off to the organic glands on the surface of the body, and changes the diseased action of the organic glands, sometimes causing them to assume a healthy action.

I will conclude by remarking, that the dilatation and increase in size of the carotid arteries during the growth of the stag's horns, the dilatation and increase in size of the uterine arteries during gestation, cannot be attributed to the blood, or cannot be attributed to any substance introduced into the blood, inasmuch as the other arteries continue in their normal state. The dilatation and increase in size are attributable to what is called vital action, but as vital action is synonymous with life, and as life is located in the organic nervous system, it follows, therefore, that dilatation and increase in size of the carotids and uterine arteries are due to the presence of the organic nerves in the coats of the arteries.